BREEDING TROPICAL FISH

2) FACTORS TO CONSIDER

By Chase Klinesteker SWAM, Mar-April 2003

This article is the second in a series of 5 articles on the subject of breeding tropical freshwater fish. This by no means is fully comprehensive but stems from my own experience over a number of years. The success I have had breeding fish has in great part come from the helpful information and generosity of members of the Southwest Michigan Aquarium Society (SWAMAS) and Grand Valley Aquarium Club (GVAC) over many years. The article subjects are:

1) Introduction and Some Ways Fish Breed
2) **Factors To Consider**
3) Breeding Setups
4) Treating water
5) Reasons For Failure

There are several factors that should be considered when breeding tropical fish. A) Knowledge about the fish, B) Temperature, C) light, D) Cover, E) Water, F) Conditioning, G) Cleanliness, and H) Healthy young breeders, are some of the more important ones. These are not listed in any order of importance as that can vary according to species. Not as much attention to these factors is needed when spawning easy to breed fish. For example, zebra danios require little more effort than placing a healthy pair in a small tank, clean water, and some marbles on the bottom to hide the eggs. As certain fish species are more difficult to breed, these factors should be paid more attention to.

A) KNOWLEDGE ABOUT THE FISH
This is one of the more important factors. Without proper information about conditions in their natural habitat and how others have bred the fish, it would be mostly luck to breed them. This factor was discussed in the Introduction, the first article of this series.

B) TEMPERATURE
Many tropical fish can be successfully bred at temperatures from 75 to 82 degrees Fahrenheit. Often a temperature rise can be part of the stimulus to start fish breeding (e.g. male bettas raised from 75 to 80 degrees will build more nests). A temperature rise is not needed in all species. An improvement in conditions (e.g. water change) can also initiate spawning behavior. A temperature drop is helpful in some species such as cory catfish where the cooler rainy season stimulates spawning. On the opposite side are discus which require 85 to 90 degrees for good health and spawning. We have to remember that each species has a temperature range at which it does best. About the middle of that range is a good place to start. Because fish are cold-blooded animals, their metabolism rises with increased temperature. Too high a temperature for that species will cause increased stress and too low a temperature may expose fish to diseases, especially if the temperature drop is not gradual. Proper breeding temperature also allows for the proper growth and health of the resulting fry. In some species the temperature of the water dictates the resulting sex ratio of the fry.

C) LIGHT
Often it is noted in the literature that a species of fish will begin spawning in the early morning, especially as sunlight first hits the tank. Many tetras from "blackwater" environments will spawn more readily in a shaded or dimly lit tank, especially if peat moss extract from a peat filter dims the light condition even further. Their natural habitat is often in streams shaded by heavy vegetation cover. I have seen reports that claim neon and cardinal tetras spawn at night. Many substrate spawners who dig pits on the bottom gravel for nests seem not to be bothered by light. They may prefer well lit open areas to better defend their nests (e.g. bluegill). Fishes' eyes are about 5 times more sensitive to light than our eyes, and most have no pupils or eyelids to protect them from extreme changes in light intensity. Research has shown

that the length of daylight may activate northern species of fish to move into the shallows to breed (e.g. bass and bluegill), although the actual dropping of eggs is determined by temperature. Many fish will breed in a bare bottomed tank but many others will be very "spooked", especially if the tank bottom is light colored. For that reason I prefer dark gravel or a slate bottomed tank to breed fish. On certain species I will place black plastic over the back and sides of the aquarium. When a light is turned on over an aquarium in the morning, the fish can become very stressed and dash wildly about. I feel that the intensity and timing of light in the aquarium can aid or hinder spawning activity. It is important to have a "comfortable" environment for fish before they will spawn.

D) COVER

Cover is another factor that relates to the comfort level of the fish. Adequate hiding places for the female to get away from an over aggressive male is very important. Pots, caves, rocks, and plants will suffice, depending on the species. Finely branched live or plastic plants for the egg scatterers are very helpful. A horizontal piece of slate can be helpful for many South American substrate spawners. Others (e.g. angelfish) prefer a vertical or angled piece of slate to deposit their eggs. Too much cover or too large a tank could be a problem also, especially if the fish are shy or easily spooked as they may not run into each other enough to breed or it could not be determined if the fish had bred.

E) WATER

There is a wide variety of water types preferred by the many species of fish we keep and breed. South American fish, especially the tetras coming from jungle areas with lots of rainfall, may require soft acid water for breeding. African rift lakes where many of our African cichlids originate from contain quite hard alkaline water. Most aquarium fish can tolerate water somewhere in between these two extremes, but breeding some of them can require more exacting water conditions. Hatching the eggs and raising the fry may be the most difficult. Neon and cardinal tetras will lay eggs in regular tapwater but they will not hatch unless put in soft acid water. Adding some salt may be helpful for some fish (e.g. mollies, pupfish, gobies, etc.) that may be from coastal areas or alkaline soil regions. No matter what the composition, water for breeding fish should be clean and fresh.

F) CONDITIONING

Proper feeding of breeders before spawning is quite important. The best possible diet makes for breeding readiness and healthy, vigorous resulting fry. A variety of quality foods is the key. Live foods(daphnia, grindal worms, black worms, etc.), frozen foods (brine shrimp, beef heart, liver, etc.), and quality dry foods, both protein and algae based. Even vegetarians such as dwarf bristlenose benefit by adding some protein (e.g. frozen brine shrimp) to their diet. Separating the sexes is beneficial in almost all species. Use good filtration and clean water in the conditioning tank since heavy and frequent feeding will pollute the water more. A week of conditioning is usually enough for most species.

G) CLEANLINESS

Clean water, clean tank, and clean cover all can be beneficial. I would use some kind of filtration such as a sponge filter to keep the bacteria level very low. A box filter with peat moss in it works great for fish that prefer soft acid water. Generally I do not feed the breeders unless I intend to keep them there for more than 5 or 6 days. If I do feed them, small amounts of live foods pollute the least. For single species tanks where I keep several adults to breed for a long period of time, I make an area free of gravel at the front where I can siphon off excess food after feeding if necessary.

H) HEALTHY YOUNG BREEDERS

This may be the most important factor of all! Many times fish bought in a store can be in bad health, under stress, or diseased. Most quality fish stores will quarantine and treat fish that come in diseased or in poor shape. Look for good finnage, body shape, and activity levels of fish you might purchase. Are the fish fed adequately? Do you see diseased or dead fish in any of the tanks? Are the fish sexable? Are there any females full of eggs? There is a fine line between a fish full of eggs and being eggbound. I would avoid purchasing any fish that look like they are bursting with eggs, as they may be eggbound (or have dropsy). The reason I stress young breeders is that they are generally more fertile and have healthier fry. Most commercial fish breeders will replace their breeding stock before they reach half their normal lifespan. Older, ckspoonpl1@aol.com, stevenmurray4502@comcast.net, 01cent@comcast.net, silka@msms.org, blbhale@yahoo.com, b.weems@grtumc.org, henwoodjaandij@comcast.net, lsproul@iserv.net, pastordavid@grtumc.org, douglas.m.brant@gmail.com, laurabrant34@att.net, ran.hamstra@gmail.com, skeisele@yahoo.com patterson715@yahoo.com, squails2000@yahoo.com, cnh2600@att.net, n.manett@comcast.net, alicevfrancis@comcast.net, sre.peace@yahoo.com,

ellamaebergman@yahoo.com, larger fish may lay more eggs, but the hatch rate is poorer and the fry are not as vigorous. This is especially true of many South American tetras from soft water areas. It is believed that some species become unable to lay eggs after being in hard water about 6 months.

The next article in this series will discuss different breeding setups.